Exercise 2 - Parallel Programming

Parallel Programming, WiSe 2024/25
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1) Download the program "firstProg.c" from the e-learning course.
    a. Look at the program and think with your seatmate about what the program does and why.
    b. Compile the program:
       `gcc -fopenmp -o firstProg firstProg.c`
    c. Run the program with a different number of threads:
       `OMP_NUM_THREADS=2 ./firstProg`
       or: `export OMP_NUM_THREADS=2` and then `./firstProg`
    d. Modify the program to print both print outputs from all threads.
    e. In addition, the corresponding thread id and the number of threads should now be output for each print statement.
       Outside the parallel area, output the number of threads again. What do you notice?

2) Write the following C program:
    a. There are three arrays: A, B, and C. These arrays' size will be passed as an argument when the program is executed. Reserve memory in the heap for the three arrays according to the size passed.
    b. Array A and array B are to be filled with random numbers.
       Tip: Google for the functions rand() and srand().
    c. Array C is filled with the sum of array A and array B in place of the corresponding index (C[i] = A[i]+B[i]). The calculation of this sum should be parallelized with OpenMP.